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Jean-Pierre Isnard

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EXAMINER

CHEUNG, WILLIAM K

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Request for Continued Examination

1. The request filed on March 17, 2008 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 10/520,903 is acceptable and a RCE has been established. An action on the RCE follows.
2. In view of the amendment filed November 20, 2007, new claim 10 has been cancelled. Claims 1-9, 11-16 are pending. The examiner also acknowledges the receipt of the Declaration filed March 17, 2008, and has considered the Declaration for the instant application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 1796

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-9, 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wirth (US 4,316,825) in view of Durand et al. (EP 0 180 420), for the reasons adequately set forth from paragraph 4 of the office action of June 22, 2007.

1. (Currently amended) An improvement in a process for the polymerization or copolymerization in the gas phase of olefin(s) by bringing the olefin(s) into contact, under polymerization or copolymerization conditions in a reactor in which the polymer or the copolymer is maintained in a fluidized bed and/or agitated with mechanical stirring, with a catalyst system, the improvement comprising, prior to the introduction of the catalyst system in the reactor, subjecting the reactor to a cleaning treatment that includes the steps of introducing into the reactor an alkane having from 4 to 8 carbon atoms, circulating said alkane across the reactor under pressure and elevated temperature, and then depressurizing and purging the reactor of the alkane, wherein the quantity of alkane used for the cleaning treatment is such that the alkane partial pressure is between 25 and 95% of the saturated vapor pressure of the alkane under the temperature and pressure treatment conditions.

Wirth (col. 3, line 52-52; col. 4, line 61-62) discloses a pre-start up cleaning step involving assembling the reactor, rinsed the reactor with dry hexane and purged overnight. Although Wirth does not explicitly disclose "circulating said alkane across the reactor", the examiner has a reasonable basis that this claimed feature is inherently possessed in the "rinsed" teachings of Wirth because "rinsing the reactor" involving delivering the dry hexane to areas that are hard to reach, it would not be difficult to one

Art Unit: 1796

of ordinary skill in art to recognize that “rinsing” involves “circulating” the dry hexane in order to clean all the critical areas of the reactor where it may make contact with the reactants in subsequent reactions or polymerizations.

The difference between the invention of claims 1-9, 11-16 and Wirth is that Wirth is silent on a step involving pressurizing the system while the reactor is being cleaned.

Durand et al. (page 29-35) disclose a fluidized bed reactor being cleaned through successive pressurizing the reactor under nitrogen at 90 °C, following by degassing to atmospheric pressure to successfully reach a water level of below 0.3 vpm. In view of the substantially identical endeavors of Wirth and Durand et al. of drying gas phase reactor for a polymerization where moisture can be detrimental to the polymerization, motivated by the expectation of success and effectiveness of pressurizing the reactor while rinse or purging the gas phase reactor, it would have been obvious to one of ordinary skill in art to incorporate the “pressurizing the reactor at elevated temperature” feature of Durand et al. into Wirth to obtain the invention of claims 1-9, 11-16.

Regarding the claimed “alkane partial pressure” of claims 1-9, 11-16, since Durand et al. (page 29-35) clearly disclose a fluidized bed reactor being cleaned through successive pressurizing the reactor under nitrogen at 90 °C, Durand et al. have adequately indicated the criticality of pressurizing the reactor at elevated temperature. Since Wirth has adequately disclose an amount of hexane for cleaning a gas phase reactor, motivated by the expectation of success of obtaining a dry reactor for performing a polymerization reaction process, it would have been obvious to one of ordinary skill in art to apply “routine optimization” technique to optimize the partial

pressure of hexane in the disclosed pressurized and heated reactor to obtain the partial pressure features of claims 1-9, 11-16.

Regarding the pressure requirement (5 to 30 bars; 0.5 to 3 Mpa) of claim 14, Durand et al. (page 29-35) clearly disclose a fluidized bed reactor being cleaned through successive pressurizing the reactor under nitrogen at 90 °C at 1.8 Mpa.

Response to Arguments

5. Applicant's arguments filed March 17, 2008 have been fully considered but they are not persuasive.

Applicants in the Declaration (paragraph 12) argue that the process as claimed do not associate an alkane in the liquid phase. However, the applicants' claims as written do not exclude an alkane in the liquid form. Therefore, applicants' argument is not supported by the claims as written. Further, applicants must recognize that hexane used according to teachings of Wirth or Durand et al. exists in both liquid and gas forms in view of that hexane exists in liquid-gas equilibrium state inside a reactor.

Regarding applicants' argument that the claimed invention is an improvement on a polymerization process involving a fluidized bed reactor, applicants fail to recognize that the claims as written do not exclude a polymerization involving a gas and a liquid, in view of "the copolymer is maintained in a fluidized bed and/or agitated with mechanical stirring" recited in claim 1 (line 4).

Regarding applicants' argument that Wirth is not directed to using a fluidized bed reactor, applicants fail to recognize that claim 1 (line 4), the recitation "the copolymer is

Art Unit: 1796

maintained in a fluidized bed and/or agitated with mechanical stirring” as written does not necessarily require a fluidized bed reactor.

Regarding applicants' comment that it is not possible to provide comparative data requested by the examiner because it is impractical to use a liquid to rinse a gas phase reactor, applicants must recognize that the comparative data are still required to overcome the 103 rejection set forth.

Figure 1

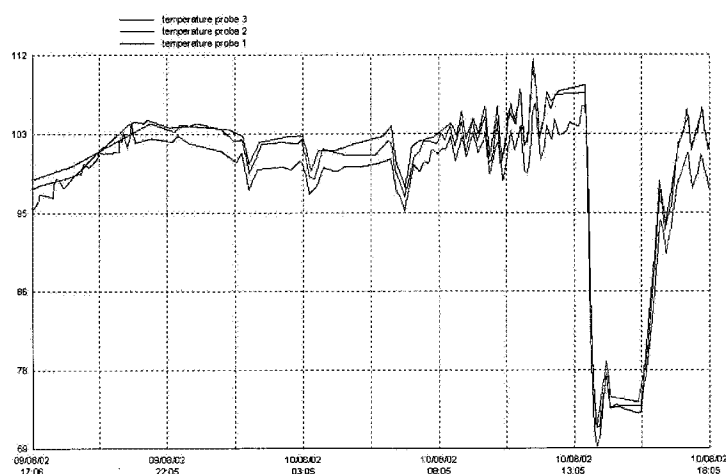
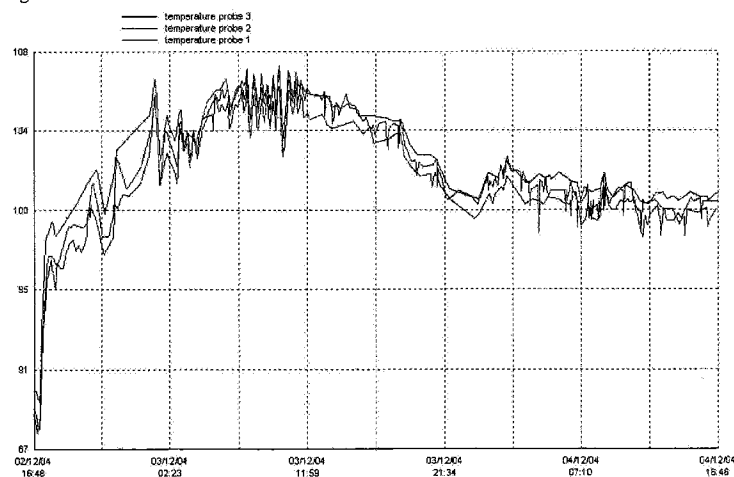


Figure 2



Regarding applicants' argument that Figures 1 and 2 provide the contrast between a process that has been rinsed (Figure 1) and a process that has not been rinsed (Figure 2), applicants fail to recognize that Figures 1 and 2 fail to provide the criticality of the claimed invention, which requires the pressurizing the reactor, by providing comparative data that are commensurate to the scope of the claimed invention and the art relied on for the rejection. Applicants must recognize that the difference between the claimed invention and the invention of Wirth is the pressurization of reactor for preparing a reactor for a polymerization process, not with or without rinsing with hexane.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

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/William K Cheung/
Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.

Primary Examiner

May 30, 2008